

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CONSTRUCTION SPECIFICATION
CS-61: "WIRE MESH GABIONS"

61.1 SCOPE

The work shall consist of furnishing and installing wire mesh gabions at the location and to the lines and grade as shown on the drawings.

61.2 MATERIALS

Wire shall be American Iron and Steel Institute 1006, or 1010, medium tensile strength steel wire with galvanized or polyvinyl chloride coating. Wire used in the mesh shall not be less than 0.11 inch in diameter. Selvages shall be made from wire of not less than 0.148 inch in diameter. Tie and connecting wire shall not be less than 0.09 inches in diameter.

Rock for filling the baskets shall conform to MS-212 and shall be within the grading limits as shown on the drawings.

The filter and bedding requirements are shown on the plans and the material shall conform to the applicable NRCS material specifications shown in the plan.

61.3 FOUNDATION PREPARATION

The foundation shall be cut or filled and graded to the lines and grades shown on the drawings. When fill is required, it shall consist of approved materials and shall conform to the material and compaction requirements shown on the plan. Vegetation, surface irregularities, and loose material shall be removed from foundations. Gabions or bedding shall not be placed until the foundation preparation is completed.

61.4 BEDDING

When bedding is specified beneath the gabion, the bedding material shall be spread uniformly and compacted to the depth and density using the material shown on the drawings.

61.5 FABRICATION

The wire mesh shall be securely fastened at the intersection of all wires making up the mesh. Maximum mesh openings shall not be greater than 4.5 inches measured in any direction. Gabions shall be fabricated so that the sides, lid, and diaphragms can be assembled at the construction site into rectangular baskets of the specified sizes. Where the length of the gabion exceeds its width, the gabion shall be equally divided by diaphragms into cells, so that the effective length of each cell does not exceed the gabion width.

Gabion top, bottom, side and diaphragm edges shall be connected in a manner that the strength and flexibility at the connection is at least equal to that of the mesh. Edges of the wire mesh fabric shall be securely selvaged or bound.

61.6 ASSEMBLY

Unless otherwise specified, the manufacturer's installation recommendations shall be followed.

Ties and connections shall be very securely made with the wire provided by the manufacturer. Adjoining gabions shall be joined by connections with strength equal to that of the wire mesh. Tie wires used to connect adjoining gabions shall be separate from tie wires used to assemble the individual baskets.

61.7 FILLING

The placement of rock in gabion baskets, including the installation of connecting wires, shall be performed in the following sequence for the depth of the gabions as indicated:

- a. Thirty-six Inch deep gabion baskets:
 - (1) Fill gabions to a depth of 12 inches and tightly tie one connecting wire in each direction to opposite faces of each gabion at 12-inches above the base.
 - (2) Fill gabions another 12 inches and tightly tie one connecting wire in each direction to opposite faces of each gabion at this level.
 - (3) Complete filling of gabions.
- b. Eighteen and Twelve Inch deep gabion baskets:
 - (1) Connecting wires are not necessary in the 12-inch size.
 - (2) Connecting wires are only necessary in the 18-inch size gabion when it is used to construct vertical structures. If required, tie one connecting wire in each direction to the opposite face, at 9 inches above the base, after filling with rock to this level.

The gabions shall be carefully filled with rock, by hand or machine placement, to ensure alignment and provide a compacted mass with a minimum of voids. Machine placement may have to be supplemented with handwork for the final arrangement of rocks.

Cells in the row shall be filled in stages such that the depth of rock placed in any cell does not exceed the depth in an adjoining cell by more than one foot. Rock on visible faces shall not be smaller than 4 inches.

61.8 CLOSURE AND SECURING

When the gabion has been filled, the lid shall be bent and stretched until it meets the perimeter edges of the front and end panels. To assist in closing and lacing, a pinch bar or special closing tool may be used. The lid shall then be tightly laced with lacing wire to the edges of the front and end panels. The lids shall also be securely tied to each adjoining gabion with lacing wire along all contact edges. Lacing adjacent lids to the vertical panels in one operation is acceptable. Lacing

the back edge of the lid to adjoining gabions shall be done prior to filling the gabion. The lid shall be tied to each diaphragm by lacing wire.

61.9 FILTER MATERIAL

Filter material, if required, shall be of the gradation and depth placed at the location as shown on the drawing. Fabric filters shall not be placed adjacent to the woven wire without bedding.

61.10 BACKFILLING

The backfill material shall be native soil material, unless otherwise specified, compacted to the density of the undisturbed surrounding soil.